

REMARKS

Claims 14-33 are presently in the application. Claims 1-13 have been canceled.

The examiner's indication of allowable subject matter in claims 16-23, 25 and 27 is greatly appreciated.

Claims 14, 15, 24 and 26 have been rejected under 35 U.S.C. 103(a) as unpatentable over Terrone (US 4028573) in view of Muller et al (US 6983528).

The statement of the rejection on page 2 of the Office action refers to only claims 14 and 15, but the detailed explanation also refers to claims 24 and 26. Applicants also note that Terrone (US 4028573) is not listed on either the applicants' IDS or the "Notice of References Cited" (PTO Form 892). Clarification of the claims which are rejected and correction of the "Notice of References Cited" are requested in the next Office action.

Claim 14, the sole independent claim, is directed to a primary element for an electrical machine, comprising: a magnetically conductive body 11 assembled from laminations resting axially on one another and having a plurality of axially extending teeth 15 disposed in a star pattern, a winding of individual annular coils 12 (Fig. 5) which are wound separately as coil-body-less air coils and thrust radially onto the teeth, a compensation element 20 on at least one face end of the magnetically conductive body, the compensation element being elastically deformable in the axial direction of the tooth and being placed onto each of the face ends, located in a transverse plane to the body axis, of the teeth, and the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element; and a closed ring element 19 joining all the compensation elements together to make a compensation mask 18.

Terrone teaches a rotor for an electric machine in which the stack of sheets 1 is received between two flanges 5, 6, one rigid with the shaft 3 of the machine and the other fitted elastically and tightly on this shaft, each of the flanges being provided with a plurality of axially extending hollow lugs or tubular bodies 7, 8, 11, 12 deposited in annular arrays around the axis of the shaft and alternately of greater or lesser length, the lugs or tubular bodies being parallel to the axis of the shaft and being received within notches 4 of the plates such that each long body reaches toward and substantially meets a short body of the other body. Each pair of lugs or tubular bodies forms a respective notch and their central cavities are aligned and disposed so as to extend through the stack to receive the conductors of the windings of the rotor.

Terrone further teaches that in order to assemble the rotor, the ferromagnetic sheets 1 are first collated such that their notches 4 are aligned as accurately as possible. The bosses of flange 5 and the shaft 3 are then inserted into the stack so that the shaft passes through central holes 2 while the bosses 7 and 8 are received snugly in the notches 4. The flange 6 is then fitted with its central hole 10 over the shaft 3 and its bosses 11 and 12 in alignment with the notches 4 of the stack. The flanges 5 and 6 are angularly positioned relative to one another such that each of the long bosses 7 or 11 is aligned with and extends toward one of the short bosses 8 or 12 of the other flange. The flange 6 is then pressed onto the shaft 3 and the stack of sheets 1 is thereby clamped between this flange and the fixed flange 5. The elasticity of the flange 6 locks the assembly in place. The slots 9 and 13 open to the exterior through the radial slots of the notches 4. After assembling of the rotor, the windings are inserted through the aforementioned slots and connected to the collector "in accordance with the conventional techniques," (col. 3, ll. 59, 60) the windings being received in the channels formed by each pair of bosses 7, 12 or 8, 11, one

member of each pair prolonging the other. The shaft 3 is then fixed rotatably in the stator housing and its shoulder 14 insures precise axial positioning of the stack without the need for shimming or other correction.

Claim 14 requires "a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth." No such structure is taught or suggested by Terrone. Contrary to the examiner's findings, Fig. 2 of Terrone does not illustrate a winding of individual annular coils which are wound separately as coil-body-less air coils which are thrust radially onto the teeth.

At col. 3, ll. 57-61, Terrone teaches that after the rotor is assembled, the windings are inserted through the slots 9, 13 and received in the channels formed by each pair of bosses 7, 12 or 8, 11. While not explicitly stated in Terrone, it is clear that the windings are wound directly into the notches 4, since the shape of the sheets or disks 1 make radial assembly of separately shaped annular coils completely impossible.

Further, claim 14 requires "a compensation element on at least one face end of the magnetically conductive body, the compensation element being elastically deformable in the axial direction of the tooth and being placed onto each of the face ends, located in a transverse plane to the body axis, of the teeth, and the annular coil which is thrust onto the tooth being pressed axially onto the at least one compensation element."

Particular attention is directed to the language "the annular coil . . . being pressed axially onto the at least one compensation element." In Terrone, the winding is simply wound on the assembled body comprising the flange 5, the plates 1 and flange 6. There is no teaching in

Terrone that the coils (which are not illustrated) are “pressed axially” onto the flange 6, which the examiner construes as the applicants’ claim compensation element.

Terrone also fails to teach “a closed ring element joining all the compensation elements together to make a compensation mask” as required by claim 14.

The examiner cites Muller for a teaching of “air-coils” and a closed ring which joins all the compensation elements together.

Muller teaches a method for winding a stator of a brushless direct current motor having a stator body with a pre-determined number of stator teeth, wherein the stator teeth are respectively wound with two coils which are magnetically coupled and which permit the generation of opposite magnetic fields by the supply of current with variable directional orientation, and wherein each of the two coils comprises a predetermined number of conductors, the method comprising the steps of: a) simultaneously winding each of the two coils onto said stator teeth in several partial winding steps with an even number of $2n$ conductors, allocating a first set of n conductors of the $2n$ conductors to a first coil of said two coils and allocating the other set of n conductors of the $2n$ conductors to a second coil of said two coils; and, b) repeating step a) until the predetermined number of conductors per coil has been reached.

The examiner finds that Muller teaches a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth, citing Fig. 2 of Muller.

However, Muller describes Fig. 2 simply as “a perspective representation of a stator according to the invention.” See col. 3, ll. 18, 19. Further details are found at col. 3, l. 59-col. 4, l. 36. Nowhere in this discussion of Fig. 2 does Muller teach or suggest a winding of individual

annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth. To the contrary, Muller clearly teaches that the coils are wound on the teeth of the stator. See, for example, col. 4, l. 10.

The examiner also finds that Muller teaches a closed ring element joining all the compensation elements together to make a compensation mask, citing Fig. 2, elements 9 and 17.

Attention is directed to the fact that the examiner fails to identify the claimed compensation elements in Muller. How can there be a closed ring element joining all the compensation elements together to make a compensation mask in Muller, if Muller does not teach or suggest compensation elements? Anyone who reads Muller's description would learn that, in Fig. 2, element 9 is the stator body and element 17 is the upwardly extending wall of ring 13, which is molded on the stator body 9. The ring 9, 17 serves as a holder for the connection elements 15a for making electrical contact with a printed circuit 18 as shown in Fig. 4. The ring has nothing to do with the windings.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) and MPEP 2143.03. Neither Terrone nor Muller et al teaches or suggests a primary element for an electrical machine of the type recited in claim 14 including a winding of individual annular coils which are wound separately as coil-body-less air coils and thrust radially onto the teeth or a compensation element on at least one face end of a magnetically conductive body, the compensation element being elastically deformable in the axial direction of a tooth of a magnetically conductive body and being placed onto each of the face ends, located in a transverse plane to the body axis, of the teeth, and the annular coil which is thrust onto the tooth

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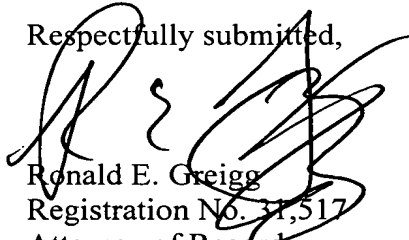
being pressed axially onto the at least one compensation element or a closed ring element joining all the compensation elements together to make a compensation mask. Accordingly, claim 14 and claims 15, 24 and 26, dependent on claim 14, are not rendered obvious by the combined teachings of Terrone and Muller et al.

Claims 28-32 have been rejected under 35 USC 103(a) as unpatentable over Terrone in view of Muller et al and Uchida et al (US 5763978) and claim 33 has been rejected under 35 USC 103(a) as unpatentable over Terrone in view of Muller et al and Hsu (US 6400059).

Neither Uchida et al nor Hsu solves the basic deficiencies of the Terrone-Muller combination pointed out above. Therefore, even if one would have combined the teaching of Uchida et al with those of Terrone and Muller or the teachings of Hsu with those of Terrone and Muller, one of ordinary skill would not have arrived at the subject matter defined by claims 28-33.

Entry of the amendment and allowance of the application are respectfully requested.

Respectfully submitted,



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